

## **REMARKS**

Claims 1-43 are rejected in the Office Action and remain pending. Claim 29 has been amended. Upon entry of the amendment, Claims 1-43 remain pending.

Support for amended Claim 29 is found in the specification as originally filed. Applicant respectfully requests entry of the amendment.

## **RESTRICTION REQUIREMENT**

Applicant thanks the Examiner for removing the Restriction Requirement for the reason that search and examination of the claims could be made without serious burden. Applicant addresses the rejection of each of Claims 1-43 according to the numbered sections of the Office Action, as follows.

### **2. § 103 REJECTIONS OVER YOKOKAWA IN VIEW OF OZAWA**

Claims 1, 4, 9-16, 18, 19, 35, 38, and 40-43 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,094,949, Yokokawa, in view of U.S. Patent No. 5,910,544, Ozawa. Applicant respectfully traverses the rejection and requests reconsideration.

For a rejection of claims under §103 over a combination of references, the combined references must disclose each and every limitation of the claims. If any element of the claims is missing from the combination, rejection is improper. Alternatively if a limitation is missing from a combination of references, there must be a motivation or apparent reason to modify the combined teachings to supply the missing limitation. In particular, a rejection alleging such a motivation or apparent reason is present should particularly point out where such a teaching is to be found in the prior art. It is improper hindsight to rely on the Applicant's own disclosure to supply anything missing from prior art teachings. Further, in considering whether there is a

reason to so modify the combined teachings of the references, it is appropriate to consider the entire teaching of a reference, including those portions that teach away from making the modification. The rejections over *Yokokawa* in view of *Ozawa* will be addressed with these principles in mind.

The references, even when combined, do not disclose or suggest a key limitation of the rejected claims. That limitation is that, after a partially cured thermoplastic vulcanizate is brought into contact with a substrate (with or without an adhesive layer), the curing of the thermoplastic vulcanizate is completed while it is in contact with the substrate. *Yokokawa* does disclose completely curing a fluoroelastomer composition at column 5, lines 13-34, as cited in the Office Action. However, there is no teaching of such carrying out such curing while in contact with a substrate, as required in the rejected claims. The discussion of the references in the Office Action does not supply this missing element of the claims.

The primary reference (*Yokokawa*) is cited for teaching a partially cured vulcanizate. The reference discloses adding a curative agent to a blend of fluorinated elastomer and polyvinylidene fluoride at low temperatures. The purpose of the low temperature is to avoid premature cure of the elastomer in the presence of a curing agent before further processing. The Examiner takes the position, however, that *Yokokawa* discloses partially cured dynamic vulcanizates because the reference also teaches subsequent curing of the blend to make certain molded articles at temperatures that are on the order of 120°, the temperature at which the elastomer and polyvinylidene fluoride are blended without cure. In the discussion that follows, the Applicant will assume the Examiner's position without conceding it.

As noted above, *Yokokawa* does not disclose any of the other claim steps. That is, there is no teaching or suggestion to contact a partially cured dynamic vulcanizate with a substrate, or to complete the cure of the dynamic vulcanizate while in contact with the substrate.

The secondary *Ozawa* reference does not provide the missing element of the claims. *Ozawa* discloses extruding compositions on a mandrel where one of the compositions is an adhesive and another is a thermoplastic elastomer composition. Columns 21 and 22 of the reference describe extrusion of an inner tube, a reinforcing layer, and an outer layer cover of a hose. At column 22, lines 32-38, *Ozawa* states

If necessary, an adhesive is coated on the reinforcing layer for the bonding on the outer cover, then a low permeability thermoplastic elastomer composition is similarly extruded...to form the outer cover.

Finally, the mandrel is pulled out, whereupon a low permeability hose of the present invention is obtained.

The reference thus teaches that the article (in this case a low permeability hose) is made by a sequential extrusion process. But the reference further states at lines 45-47:

In the above process of production, a mandrel was used, but there is no vulcanization as required for the production of a normal rubber hose....” (*emphasis added*)

Instead of supplying the missing key limitation of completing cure of a thermoplastic elastomer composition while in contact with a substrate, *Ozawa* explicitly teaches that such vulcanization after extrusion is not carried out. This is a clear teaching away from doing what Applicant has done in the rejected claims.

Because the references when combined do not contain every element of the rejected claims, and because the disclosure of the references in fact teaches away from carrying out the missing claim element, Applicant respectfully submits that his claims are patentable over the combined references. Accordingly, Applicant respectfully requests the obviousness rejection over *Yokokawa* in view of *Ozawa* be withdrawn.

### **3. § 103 REJECTION OF CLAIMS 2 AND 3, FURTHER IN VIEW OF THE EISINGA REFERENCE**

Claims 2 and 3 stand rejected as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of *Eisinga* (U.S. Patent No. 5,792,348). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are discussed above in section 2. Applicant respectfully submits that the disclosure of *Eisinga* does not make up for those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

### **4. § 103 REJECTION OF CLAIMS 5-7, FURTHER IN VIEW OF THE DEANTONIS REFERENCE**

Claims 5-7 stand rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of the *DeAntonis* reference (EP 0 132 583). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are discussed in section 2 above. Applicant respectfully submits that the *DeAntonis* reference does not make up for those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

### **5. § 103 REJECTION OF CLAIM 8, FURTHER IN VIEW OF THE KOLB REFERENCE**

Claim 8 stands rejected as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of the *Kolb* reference (U.S. Pat. No. 3,884,877). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are discussed in section 2 above. Applicant respectfully submits that *Kolb* does not make up for those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

**6. § 103 REJECTION OF CLAIM 17, FURTHER IN VIEW OF THE KOLB REFERENCE**

Claim 17 stands rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of the *Kolb* reference (U.S. Pat. No. 3,884,877). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are discussed in section 2 above. Applicant respectfully submits that *Kolb* does not make up for those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

**7. § 103 REJECTION OF CLAIM 20, FURTHER IN VIEW OF THE EISINGA REFERENCE**

Claim 20 stands rejected under 35 U.S.C. § 103(a) as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of the *Eisinga* reference (U.S. Pat. No. 5,792,348). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are discussed above in section 2. Applicant respectfully submits that the disclosure of *Eisinga* does not make up for those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

**8. § 103 REJECTION OF CLAIM 21, FURTHER IN VIEW OF THE DeANTONIS REFERENCE**

Claim 21 stands rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of *DeAntonis* (EP 0 132 583). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are discussed in section 2 above. Applicant respectfully submits that *DeAntonis* does not make up for those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

**9. § 103 REJECTION OF CLAIMS 22-26 AND 28, OVER THE YOKOKAWA REFERENCE FURTHER IN VIEW OF THE DEANTONIS REFERENCE**

Claims 22-26 and 28 stand rejected under 35 U.S.C. § 103 as obvious over *Yokokawa* and further in view of *DeAntonis* (EP 0 132 583). Applicant respectfully traverses the rejection and requests reconsideration.

As with the combination of *Yokokawa* and *Ozawa* discussed in section 2 above, the combined references do not disclose a key limitation of the rejected claims. They do not teach, and the Office Action points to no such passage as teaching, the recited claim step (c) of “completing the cure of said coextruded partially cured dynamic vulcanizate.” Because the references even when combined fail to disclose each and every limitation of the claims, rejection under § 103 is improper. Accordingly, Applicant respectfully requests the rejection be withdrawn.

As above, Applicant assumes without conceding that *Yokokawa* discloses making a partially cured dynamic vulcanizate, extruding the thermoplastic mixture, and completing the cure of the extruded vulcanizate. Applicant notes that *Yokokawa* makes these teachings in the context of premixing an elastomer and thermoplastic material while avoiding significant cure, then extruding the uncured thermoplastic material with expansion. Thereafter, the extruded expanded material is subjected to heat treatment, whereupon the elastomer cures and a heat shrinkable material is made. Although *Yokokawa* is completely different from the current claims, it is assumed in the following that the reference at least teaches the steps noted above.

The secondary reference teaches coextrusion, but it does not supply the missing element of completing the cure of a coextruded partially cured dynamic vulcanizate after the coextrusion. *DeAntonis* discloses methods of coextruding various fluorine containing and non-fluorine containing thermoplastic polymers, with adhesive layers between alternating thermoplastic

layers. The reference does not disclose or suggest subsequent curing of the coextruded product. As a result, the combined references do not supply a key element of the rejected claims.

Nor does *DeAntonis* supply any motivation to carry out a post extrusion cure. This is most clearly seen from the fact that in *DeAntonis*, every layer that is extruded is in fact a thermoplastic. It is well understood by persons of skill in the art that thermoplastic polymers do not undergo any curing reactions. By teaching coextrusion of thermoplastic layers, *DeAntonis* is specifically teaching away from any kind of post extrusion curing. For this additional reason, the combined references do not make the subject matter of the rejected claims obvious.

For all of the reasons discussed above, Applicant respectfully requests that the rejection of Claims 22-26 and 28 over the combined *Yokokawa* and *DeAntonis* references be withdrawn.

#### **10. § 103 REJECTION OF CLAIM 27 FURTHER IN VIEW OF THE KOLB REFERENCE**

Claim 27 stands rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *DeAntonis* references, and further in view of *Kolb* (U.S. 3,884,877). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined references are described in section 9 above. Applicant respectfully submits that *Kolb* does not make up for those deficiencies. Accordingly, Applicant respectfully requested the rejection be withdrawn.

#### **11. § 103 REJECTION OF CLAIMS 29-32 AND 34 OVER THE YOKOKAWA REFERENCE IN VIEW OF THE EISINGA AND OZAWA REFERENCES**

Claims 29-32 and 34 stand rejected as obvious over the *Yokokawa* reference in view of the *Eisinga* reference (U.S. Pat. No. 5,792,348) and the *Ozawa* reference. Applicant respectfully traverses the rejection as applied to the amended claims and requests reconsideration.

In order to clarify the claims and illustrate more clearly the patentable differences between the claims and the combined references, Applicant has amended Claim 29 to recite that the step (d) of completing the cure of said elastomer composition occurs “while in contact with the substrate.” The amendment makes explicit what was implied in the unamended claim, that is, that completing the cure of the elastomer composition occurs after insertion molding the elastomer composition to contact the substrate, so that necessarily the cure is completed while the composition is in contact with the substrate. Applicant respectfully submits the amendment is not narrowing.

The *Yokokawa* reference fails to disclose many features of the claims. As stated in the Office Action, the reference teaches injection molding and curing of an elastomeric composition to make various articles, as described generally in columns 4 and 5. As stated in the Office Action, the *Yokokawa* reference does not provide the solid metal substrate, applying an adhesive layer to the substrate, placing the adhesive covered substrate into a mold, or insertion molding a composition to contact the substrate. For completeness, Applicant would like to add that, further, the *Yokokawa* reference does not disclose a key limitation of the rejected claim (as currently amended), that being the step (d) “completing the cure of said elastomer composition while in contact with the substrate”.

With the amended claims understood as above, Applicant respectfully submits that neither *Eisinga*, *Ozawa*, nor their combination supplies the missing elements of the claims. As applied in the Office Action, *Eisinga* is cited for providing a solid metal substrate and placing the substrate in a mold. Applicant respectfully submits that even were *Eisinga* to be combined with the main reference, the combination would still not disclose several features of the amended claims. In particular, *Eisinga* does not provided the missing element of completing the cure of the elastomer composition while it is in contact with the substrate.



*Eisinga* in fact teaches away from such a cure completion step. As stated as column 2,

“The filter plates of the invention may be produced by an injection molding process wherein a prefabricated steel sheet is first inserted between the lower and upper regions of a mold. ...The sheet is typically centered within the mold. Thermoplastic synthetic resin is then injected into the mold under conditions to favor bonding of the front and back panels of the filter plate by the thermoplastic resin....” (*Emphasis added*)

The reference teaches to injection mold a thermoplastic resin around the steel sheet. Because as discussed above, thermoplastic resins cannot be cured, this disclosure of *Eisinga* teaches away from carrying out such a curing. Seen in this light, the post insertion molding curing of the elastomer composition is seen to be found only in Applicant’s disclosure.

Likewise, *Ozawa* does not provide the missing element of completing the cure while in contact with the substrate. In fact, as developed above, *Ozawa* specifically teaches that such post molding or extrusion cure is not to be carried out. Since the secondary *Ozawa* reference does not supply the missing element, Applicant respectfully submits that that teaching is to be found only in Applicant’s own disclosure.

Because the references when combined do not teach or suggest every element of the rejected claims, because they in fact teach away from carrying out at least step (d) of the rejected claims, and because disclosure or teaching to carry out step (d) of the rejected claims is found only in Applicant’s own disclosure, Applicant respectfully submits that the claims are patentable over the cited references. Accordingly, Applicant respectfully requests the rejection be withdrawn.

#### **12. § 103 REJECTION OF CLAIM 33, FURTHER IN VIEW OF THE KOLB REFERENCE**

Claim 33 stands rejected as obvious over the combined *Yokokawa*, *Eisinga*, and *Ozawa* references and further in view of *Kolb*. Applicant respectfully traverses the rejection as applied to the amended claim and requests reconsideration.

The deficiencies of the combined references are discussed above in section 11. Applicant respectfully submits that *Kolb* does not overcome those deficiencies. Accordingly, Applicant respectfully requests the rejection be withdrawn.

### **13. § 103 REJECTION OF CLAIM 36, FURTHER IN VIEW OF THE EISINGA REFERENCE**

Claim 36 stands rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of *Eisinga* (U.S. Pat. No. 5,792,348). Applicant respectfully traverses the rejection and requests reconsideration.

The deficiencies of the combined *Yokokawa* and *Ozawa* references as applied to Claim 35 is discussed above in section 2. The teachings of *Eisinga* have been discussed in various sections above. Applicant respectfully submits that, in light of the demonstrated teachings of the references, their combination would not contain all of the limitations of the rejected Claim 36. In particular, the combined references do not teach or suggest in any way that a thermoplastic vulcanizate has its cure completed on a substrate as recited in step (f) of rejected Claim 36 and Claim 35 from which it depends. For these reasons, Applicant respectfully requests the rejection be withdrawn.

### **14. § 103 REJECTION OF CLAIM 37**

Claim 37 stands rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of the *DeAntonis* reference (EP 0 132 583). Applicant respectfully traverses the rejection as applied to the amended claims and requests reconsideration.

The deficiencies of the combined *Yokokawa* and *Ozawa* references as applied to Claim 35 are discussed above in section 2. The *DeAntonis* reference does not make up for those

deficiencies. In particular, as discussed above in various sections, the *Yokokawa*, *Ozawa*, and *DeAntonis* references alone or in combination do not teach all the limitations of the rejected claims. In particular, step (f) of Claim 35 (and necessarily present in dependent rejected Claim 37), reciting completing the cure of a thermoplastic vulcanizate on the substrate, is not taught or suggested anywhere except in Applicant's own disclosure. For these reasons, Applicant respectfully requests the rejection be withdrawn.

#### **15. § 103 REJECTION OF CLAIM 39**


Claim 39 stands rejected under 35 U.S.C. § 103, as obvious over the combined *Yokokawa* and *Ozawa* references and further in view of the *Kolb* reference (U.S. Pat. No. 3,884,477). The deficiencies of the combined references are discussed above. The *Kolb* reference does not make up for those deficiencies. Accordingly, Applicant respectfully traverses the rejection as applied to the amended claims and request that the rejection be withdrawn.

CONCLUSION

For the reasons discussed above, Applicant believes that Claims 1-43 are in an allowable condition and respectfully request a Notice of Allowance. The Examiner is invited to telephone the undersigned if that would be helpful to resolving any issues.

Respectfully submitted,

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